

TABLE 29-3.—APPLICABLE TECHNIQUES, METHODS AND MINIMIZATION OF INTERFERENCES FOR AAS ANALYSIS

Metal	Technique	SW-846 ¹ Methods No.	Wavelength (nm)	Interferences	
				Cause	Minimization
Fe	Aspiration	7380	248.3	Contamination	Great care taken to avoid contamination.
Pb	Aspiration	7420	283.3	217.0 nm alternate	Background correction required.
Pb	Furnace	7421	283.3	Poor recoveries	Matrix modifier, add 10 µl of phosphorus acid to 1 ml of prepared sample in sampler cup.
Mn	Aspiration	7460	279.5	403.1 nm alternate	Background correction required.
Ni	Aspiration	7520	232.0	352.4 nm alternate Fe, Co, and Cr	Background correction required. Matrix matching or nitrous oxide/acetylene flame
Ni				Nonlinear response	Sample dilution or use 352.3 nm line
Se	Furnace	7740	196.0	Volatility	Spike samples and reference materials and add nickel nitrate to minimize volatilization.
				Adsorption & scatter	Background correction is required and Zeeman background correction can be useful.
Ag	Aspiration	7760	328.1	Adsorption & scatter AgCl insoluble	Background correction is required. Avoid hydrochloric acid unless silver is in solution as a chloride complex. Sample and standards monitored for aspiration rate.
Tl	Aspiration	7840	276.8		Background correction is required. Hydrochloric acid should not be used.
Tl	Furnace	7841	276.8	Hydrochloric acid or chloride	Background correction is required. Verify that losses are not occurring for volatilization by spiked samples or standard addition; Palladium is a suitable matrix modifier. 4
Zn	Aspiration	7950	213.9	High Si, Cu, & P Contamination	Strontium removes Cu and phosphate.
Sb	Aspiration	7040	217.6	1000 mg/ml Pb, Ni, Cu, or acid	Great care taken to avoid contamination.
Sb	Furnace	7041	217.6	High Pb	Use secondary wavelength of 231.1 nm; match sample & standards acid concentration or use nitrous oxide/acetylene flame.
As	Furnace	7060	193.7	Arsenic Volatilization Aluminum	Secondary wavelength or Zeeman correction.
Ba	Aspiration	7080	553.6	Calcium. Barium Ionization	Spike samples and add nickel nitrate solution to digestates prior to analysis. Use Zeeman background correction.
Be	Aspiration	7090	234.9	500 ppm Al. High Mg and Si	High hollow cathode current and narrow band set. 2 ml of KCl per 100 m1 of sample.
Be	Furnace	7091	234.9	Be in optical path	Add 0.1% fluoride.
Cd	Aspiration	7130	228.8	Absorption and light scattering	Optimize parameters to minimize effects.
Cd	Furnace	7131	228.8	As above	Background correction is required.
				Excess Chloride	As above.
					Ammonium phosphate used as a matrix modifier.
					Use cadmium-free tips.
Cr	Aspiration	7190	357.9	Pipet Tips	KCl ionization suppressant in samples and standards—Consult mfgs' literature.
				Alkali metal	Use Method of Standard Additions.
Co	Furnace	7201	240.7	Excess chloride	All calcium nitrate for a know constant effect and to eliminate effect of phosphate.
Cr	Furnace	7191	357.9	200 mg/L Ca and P	

Cu | Aspiration | 7210 | 324.7 | Absorption and Scatter | Consult manufacturer's manual.

¹Refer to EPA publication SW-846 (Reference 2 in Section 16.0).

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Pt. 60, App. A-8, Meth. 29

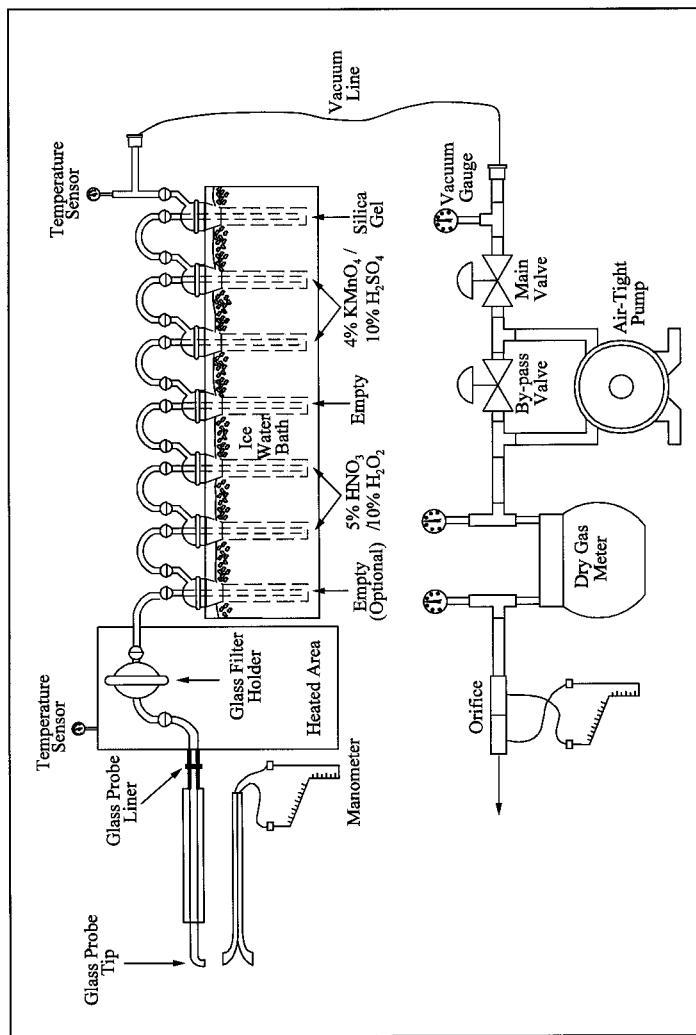


Figure 29-1. Sampling Train.